



October 14, 2022

Chair Tony Doan
Washington State Building Code Council
1500 Jefferson St SE
Olympia, WA 98501

Dear Chair Doan and Members of the State Building Code Council:

Climate Solutions thanks you for the opportunity to submit comments on the residential energy code proposals. **Climate Solutions strongly urges the State Building Code Council (SBCC) to adopt the full package of proposals; specifically, we are writing in strong support of the requirements for heat pumps for space and water heating, and stricter ventilation requirements for gas stoves.**

As the climate crisis progresses, its impacts are increasingly felt here in Washington. In the past year alone, we have seen the direct impacts of climate change in the form of unprecedented wildfires, drought, floods, and heat waves, which have cost hundreds of lives and have had significant economic impacts across the state. In the face of the climate emergency, it is critical that officials at all levels of government protect our communities from further harm, foster resilience, and reduce greenhouse gas emissions. This package of proposals takes important steps for reducing carbon emissions, lowering housing costs and living expenses for residents, and improving health and safety in our new homes that will be around for decades.

Buildings are the second largest and fastest growing source of carbon emissions in Washington State¹, largely attributable to the use of fossil gas to heat homes and buildings. In 2018, burning fossil fuels in the buildings sector in Washington produced 18 million metric tons (MMT) of carbon dioxide equivalent (CO₂e), equal to the annual emissions from 3,957,182 cars or five coal plants². To make matters worse, methane, the primary ingredient in gas, has 84 times the greenhouse gas warming potential of carbon dioxide, so leaks at any point in the gas production or distribution pathway further compounds this impact. The United Nations says³ that cutting methane emissions is “the strongest lever we have to slow climate change over the next 25 years.”

Washington’s 2021 State Energy Strategy found that electrifying buildings will be the lowest-cost pathway to meeting the state’s statutory requirement to reduce emissions 95% from 1990 levels by 2050⁴. By law, Washington’s energy code is required to become increasingly more efficient every revision cycle so that new buildings in 2031 are 70% more efficient than those built in 2006⁵. Because there are only four code cycles between now and the 2031 code and further gains will become more

¹ <https://fortress.wa.gov/ecy/publications/documents/1802043.pdf>

² <https://www.eia.gov/environment/emissions/state/>

³ <https://news.un.org/en/story/2021/05/1091402>

⁴ <https://www.commerce.wa.gov/growing-the-economy/energy/2021-state-energy-strategy/>

⁵ <https://app.leg.wa.gov/RCW/default.aspx?cite=19.27A.160>

difficult, it is essential that each revision maximizes what can be done to make buildings more efficient and transition away from fossil fuels.

The heat pump proposals will help get us there; **most significantly, electric heat pumps and induction cooking appliances are both more efficient than fossil fuel options and eliminate on-site fossil fuel combustion.** Electric heat pumps – which are 2.2x – 4.5x more efficient⁶ than electric resistance or combustion gas equipment – can reduce energy use for heating and cooling homes, especially in comparison to outdated window air conditioning units. As we continue to see peak temperatures rise in the northwest, more and more people will need air conditioning to cope with heat-related health impacts, or to adequately cool their homes while they are shut inside due to wildfire smoke. Requiring heat pumps for space heating will provide cooling as a resiliency measure, while reducing the impact on the grid as air conditioning becomes more prevalent.

Relative to a mixed-fuel home with gas heating and air conditioning, **all-electric homes reduce up-front construction costs, and save residents money on their utility bills.** A May 2022 report⁷ prepared for the Washington State Department of Commerce by Energy and Environmental Economics, Inc finds all-electric residential new construction is “cost-effective across the state.” Considering both upfront costs and bill savings, the report found all-electric new homes would save residents about \$1,000 per year, over the lifetime of the equipment. For that reason, home builders across Washington are already choosing electric appliances for heat (88%) rather than gas (12%), and for hot water heating as well (83% electric vs. 12% gas)⁸. Additionally, RMI recently updated their cost benefit analysis⁹ and found that all-electric homes cost less to build than mixed-fuel homes in both Seattle and in Spokane. A 2,400 sq ft code compliant mixed-fuel home with an air conditioner for cooling costs \$7,587 more than a code compliant all-electric home in Seattle; in Spokane a code compliant mixed-fuel home costs \$7,248 more than an all-electric home. These upfront cost savings are for three reasons:

- Heat pumps can both heat and cool, avoiding the need for separate equipment (an AC unit and a furnace)
- All-electric homes and buildings don’t need additional gas infrastructure inside and outside of the unit
- Mixed-fuel homes are required to achieve additional energy efficiency credits in section R406 to comply with the code, which adds thousands of dollars of construction costs.

It’s also important to note that the Climate Commitment Act, passed in 2021, which imposes a steadily declining cap on greenhouse gas emissions to achieve a 95% reduction by 2050, will require gas suppliers to rapidly decrease emissions and purchase allowances for a significant share of their emissions. While *existing* gas customers will receive some protection from rate increases under the CCA, except for low-income customers, the law specifically prohibits utilities from using CCA funds for customer bill credits for those already connected to the gas system¹⁰. Continuing to add new buildings to the gas distribution system would mean locking in decades of greenhouse gas emissions, stranded

⁶ McKinsey Report: <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/building-decarbonization-how-electric-heat-pumps-could-help-reduce-emissions-today-and-going-forward>

⁷ <https://www.commerce.wa.gov/wp-content/uploads/2022/06/Financial-Impact-of-Fuel-Conversion-on-Consumer-Owned-Utilities-and-Customers-in-Washington-Final-Report.pdf>

⁸ <https://neea.org/img/documents/Washington-Residential-Post-Code-Adoption-Market-Research.pdf>

⁹ <https://docs.google.com/spreadsheets/d/1pPktVQNHPkUpn94pUAIQIAYdMhOZldD9/edit#gid=1549729181>

¹⁰ Washington State Legislature, Climate Commitment Act, Section 15(c): <https://lawfilesexternal.wa.gov/biennium/2021-22/Pdf/Bills/Session%20Laws/Senate/5126-S2.SL.pdf>


assets for the gas industry, a need for expensive retrofits in the future, and a risk for customers relying on gas as prices continue to increase. To achieve our climate commitments and protect residents, **our first step must be to ensure new homes and residential buildings are built right the first time with highly efficient, electric appliances.**

Electric appliances are also vital to protect Washingtonians' health. Because of pollution from gas appliances, air quality indoors is often worse than outdoor air quality¹¹. Gas appliances emit a wide range of dangerous air pollutants, including carbon monoxide, nitrogen dioxide, particulate matter, and formaldehyde, all of which degrade indoor air quality. Just one hour of cooking on a gas stove produces nitrogen dioxide levels that would be illegal if found outdoors¹². On average, people spend around 90% of their time indoors, so these pollutants can have serious health implications. Children in homes with gas stoves have a 42 percent increased risk of asthma symptoms¹³. While pollution from gas furnaces and water heaters is vented outside, these appliances contribute to poor outdoor air quality. Buildings are the primary cause of combustion pollution-related early deaths in Washington state¹⁴ due to their contributions to air pollution (PM2.5 and ozone). Air pollution from buildings in Washington accounts for more premature deaths in the state each year than air pollution from any other sector, according to MIT¹⁵. And it's important to note that risks from exposure to pollution are not shared equally: In Washington State, and nationally, people of color and communities living on lower incomes disproportionately shoulder exposure to outdoor air pollution. Washington's low-income and communities of color have higher risks of death from air pollution¹⁶, in part due to historical redlining policies that forced people of color to live in places with greater exposure to air pollution.

Lastly, the use of fossil fuels like gas in buildings also poses safety risks from leaks and explosions, especially in an earthquake-prone region like ours. Over the past five years, an "accident or incident" has occurred on U.S. gas distribution systems on average every six days¹⁷, causing dozens of fatalities and hundreds of injuries. Gas is responsible for at least 20% of post-earthquake fire ignitions¹⁸; gas transmission pipelines run a high risk of exploding during earthquakes, and is also a liability for recovery because gas lines can take 30 times longer to restore¹⁹ than the electric system after natural disasters.

For all the reasons stated above, we urge the SBCC to adopt the full package of proposed residential code amendments, especially the requirements for heat pumps for space and water heating and the stricter ventilation requirements for gas stoves.

Sincerely,



Kelly Hall
Washington State Director
Climate Solutions

¹¹ <https://rmi.org/insight/gas-stoves-pollution-health/>

¹² <https://ucla.app.box.com/s/xyzt8jc1ixnetiv0269qe704wu0ihif7>

¹³ <https://academic.oup.com/ije/article/42/6/1724/737113>

¹⁴ <https://www.nature.com/articles/s41586-020-1983-8>

¹⁵ <https://www.sciencedirect.com/science/article/abs/pii/S1352231013004548>

¹⁶ <https://www.lung.org/clean-air/outdoors/who-is-at-risk/disparities>

¹⁷ <https://www.phmsa.dot.gov/data-and-statistics/pipeline/distribution-transmission-gathering-lng-and-liquid-accident-and-incident-data>

¹⁸ https://ssc.ca.gov/wp-content/uploads/sites/9/2020/08/cssc_2002-03_natural_gas_safety.pdf

¹⁹ <https://pv-magazine-usa.com/2019/09/17/electrification-is-an-all-around-winner/>